REMARKS

This application has been carefully reviewed in light of the Office Action dated June 23, 2009. Claims 1 to 13 are pending in the application, with Claims 14 to 42 having been cancelled herein without prejudice or disclaimer of subject matter. Claims 1, 12 and 13 are in independent form. Reconsideration and further examination are respectfully requested.

Claims 1 to 13 were rejected under 35 U.S.C. § 112, second paragraph, for allegedly being indefinite. In particular, the Office Action alleges that (1) the preambles of independent Claims 1, 12 and 13 are indefinite because the claim language indicates that the fuel cell system is inside the charger, (2) in Claim 5, it is unclear exactly how and where the mist is supplied to the fuel cell system, and (3) Claim 9 is indefinite because it is unclear why power would be provided to the fuel cell system instead of the electrolyzer.

With respect to point (1), the rejection on this point is believed to be obviated by the foregoing amendments made to Claims 1, 12 and 13.

In regard to point (2), Applicants respectfully submit that these issues relate to the scope of the claims rather than to clarity. As set forth in MPEP § 2173.04, the breadth of a claim is not to be equated with indefiniteness. Nevertheless, without conceding the correctness of the rejection, the rejection with respect to point (2) is believed to be obviated by the foregoing amendment made to Claim 5.

With respect to point (3), the rejection is respectfully traversed on this point. In this regard, Applicants submit that, in view of Claims 1 and 8, Claim 9 is clear on its face. In particular, Claim 1 provides that the power supply means supplies electric power to the fuel cell system. Claim 8, from which Claim 9 depends, provides that the power

supply means includes a power control means that controls the electric power supplied to the fuel cell system. Therefore, it follows from the language of Claim 1 and Claim 8 that the power control means of Claim 9 "controls electric power to be supplied to the fuel cell system".

Therefore, reconsideration and withdrawal of the rejections under 35 U.S.C. § 112 are respectfully requested.

Claim 1 was rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,447,945 (Streckert). Claims 2, 3 and 8 were rejected under 35 U.S.C. § 103(a) over Streckert in view of U.S. Publication No. 2003/0198064 (Zhu). Claim 4 was rejected under § 103(a) over Streckert. Claim 5 was rejected under § 103(a) over Streckert in view of U.S. Patent No. 4,795,683 (McElroy). Claims 6 and 7 were rejected under § 103(a) over Streckert in view of U.S. Publication No. 2002/0022162 (Kagitani). Claims 9 and 10 were rejected under § 103(a) over Streckert in view of U.S. Publication No. 2002/0014277 (Togasawa). Claim 11 was rejected under § 103(a) over Streckert in view of JP 2001-266915 (Shimada). Claims 12 and 13 were rejected under § 103(a) over Streckert in view of Zhu and further in view of Togasawa. Reconsideration and withdrawal of the rejections are respectfully requested.

Amended independent Claim 1 concerns a charger for generating hydrogen for storage in a fuel tank of a fuel cell system. The charger is detachable from the fuel cell system, and includes water supply means that supplies water to the fuel cell system. The charger further includes power supply means that supplies electric power to a power intake electrode of the fuel cell system that takes in electric power for electrolyzing water supplied to the fuel cell system to generate hydrogen. According to one aspect, the charger, not

having an electrolyte membrane, generates hydrogen by electrolyzing water in the fuel cell system through use of an ion conductor included in a cell of the fuel cell system.

As a result of the foregoing arrangement, a size and cost of a charger can be reduced because a cell section of a fuel cell system is used for electrolysis. In addition, because the charger is detachable from the fuel cell system, a user does not have to carry the charger together with the fuel cell system, which reduces a size of the instrument that the user must carry.

Referring specifically to claim language, amended independent Claim 1 is directed to a charger for generating hydrogen for storage in a fuel tank of a fuel cell system, the charger being detachable from the fuel cell system. The charger includes water supply means that supplies water to the fuel cell system, and power supply means that supplies electric power to a power intake electrode of the fuel cell system that takes in electric power for electrolyzing water supplied to the fuel cell system to generate hydrogen. The charger, not having an electrolyte membrane, generates hydrogen by electrolyzing water in the fuel cell system through use of an ion conductor included in a cell of the fuel cell system.

Amended independent Claim 12 is directed to a charger for generating hydrogen for storage in a fuel tank of a fuel cell system, the charger being detachable from the fuel cell system. The charger includes power supply means that supplies electric power to a power intake electrode of the fuel cell system that takes in electric power for electrolyzing water in the fuel cell system to generate hydrogen, and power control means that controls electric power to be supplied to the fuel cell system by the power supply means on the basis of a signal from a pressure sensor provided in the fuel tank of the fuel

cell system. The charger, not having an electrolyte membrane, generates hydrogen by electrolyzing water in the fuel cell system through use of an ion conductor included in a cell of the fuel cell system.

Amended independent Claim 13 is directed to a charger for generating hydrogen for storage in a fuel tank of a fuel cell system, the charger being detachable from the fuel cell system. The charger includes power supply means that supplies electric power to a power intake electrode of the fuel cell system that takes in electric power for electrolyzing water in the fuel cell system to generate hydrogen, and valve control means that opens and closes a fuel supply valve provided in a fuel flow path, which introduces generated hydrogen to the fuel tank, on the basis of a signal concerning a pressure of hydrogen from a pressure sensor provided in the fuel tank of the fuel cell system. The charger, not having an electrolyte membrane, generates hydrogen by electrolyzing water in the fuel cell system through use of an ion conductor included in a cell of the fuel cell system.

The applied art, alone or in any permissible combination, is not seen to disclose or suggest all of the features of Claims 1, 12 and 13, and in particular, is not seen to disclose or suggest at least the features of, a charger, not having an electrolyte membrane, generates hydrogen by electrolyzing water in a fuel cell system through use of an ion conductor included in a cell of the fuel cell system.

As understood by Applicants, Streckert is directed to a combination of a proton exchange membrane (PEM) fuel cell-powered portable electronic device with an electrolyzer unit for recharging a hydrogen reservoir, while at the same time powering the electronic device.

Page 6 of the Office Action alleges that an electrolyzer 71 and a fuel cell unit 33 of Streckert equate, respectively, with the charger and the fuel cell system of Claims 1, 12 and 13 of the instant application. Applicants respectfully disagree.

In this regard, Streckert is seen to disclose that the electrolyzer 71 used to recharge H_2 containers for use in a PC is preferably one that employs a separation technology in which an ion exchange membrane is employed. The electrolyzer 71 has a tank that is filled with alkaline or acidic electrolyte membrane and will be replenished with distilled or demineralized water, and water from the tank is supplied through a check valve to a cell assembly containing an ion exchange membrane. (See column 8, lines 45 to 54 of Streckert). Moreover, Streckert is seen to disclose a PEM fuel cell power-generating unit 33, which is different than the electrolyzer 71, and is preferably located in a compartment provided in a lid section between a display screen and a cover or wall surface of a lid of the PC. (See column 3, lines 46 to 50 of Streckert). Thus, in Streckert, electrolysis using an electrolyte membrane is performed in the electrolyzer 71, which the Office Action equates with the charger of Claims 1, 12 and 13 of the instant application, and not in the PEM fuel cell power-generating unit 33, which the Office Action equates with the fuel cell system of Claims 1, 12 and 13 of the instant application. In contrast to Streckert, the charger as recited in Claims 1, 12 and 13, not having an electrolyte membrane, generates hydrogen by electrolyzing water in a fuel cell system through use of an ion conductor included in a cell of the fuel cell system.

The remaining applied references, namely Zhu, McElroy, Kagitani, Togasawa and Shimada, are not seen to remedy the above-described deficiencies of Streckert. In this regard, Zhu is seen to disclose a device and method of commutation

control for an isolated boost converter which provide a unique commutation logic to limit voltage spikes. McElroy is seen to disclose a method of evaporatively cooling a fuel cell wherein the cell exhibits high packing density by eliminating the need for a separate cooling chamber. Kagitani is seen to disclose that temperature control of a hydrogen storage tank and electrolysis-fuel cell is accomplished with a thermoelectrical pump and a heat exchanger. Togasawa is seen to disclose an apparatus for rapidly filling a hydrogen tank with a hydrogen gas which comprises a hydrogen source, a hydrogen tank, a passage which connects the hydrogen source and the hydrogen tank, and a mechanism for varying the hydrogen-filling rate. Shimada is seen to disclose a fuel cell operating system which includes a residual amount detecting means which detects that an amount of remaining occluded hydrogen in a hydrogen reservoir reached an amount which is necessary for a regeneration of hydrogen storage alloy. However, Zhu, McElroy, Kagitani, Togasawa and/or Shimada are not seen to add anything that, when combined with Streckert, assuming such could be combined, would have resulted in at least the features of, a charger, not having an electrolyte membrane, generates hydrogen by electrolyzing water in a fuel cell system through use of an ion conductor included in a cell of the fuel cell system.

Accordingly, Claims 1, 12, and 13 are believed to be in condition for allowance, and such action is respectfully requested.

The other claims in the application are each dependent from the independent claims discussed above and are therefore believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

No other matters being raised, it is believed that the entire application is fully in condition for allowance, and such action is courteously solicited.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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